

AMENDMENT

U.S. Appln. No. 09/750,576

5000-1-181

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end
step (a) with a pattern of light distribution on a light exit
surface of the mask.

REMARKS

Applicants note with appreciation the indication in the Final Office Action that all grounds of rejection under 35 U.S.C. 112, as well as the objections to the specification and Abstract are withdrawn.

Applicants also note that instant claim 1 has been amended at the preamble to include the recitation that "the light source, the lens system, the amplitude mask and the optical fiber are arranged on an optical axis" and step (a) has been amended to additionally recite "wherein the width of each stripe along the optical fiber becomes narrower as the stripe is positioned further away from the optical axis." Support is shown at least in Fig. 5 and is discussed in the specification at page 9, lines 11 to 20.

SUMMARY OF THE REJECTIONS:

(1) Claims 1-7 stand rejected under 35 U.S.C. §102(e) over U.S. Patent 6,201,911 to Jang.

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(2) Claims 1,2,5,6 and 7 stand rejected under 35 U.S.C.§102(e) over Bhatia et al. (U.S. 6,269,208, hereafter "Bhatia").

(3) Claims 3-4 stand rejected under 35 U.S.C.§103(a) as allegedly unpatentable over Bhatia.

(4) Claim 1 stands rejected under the judicially created doctrine obviousness type double patenting over claims 1 and 10 of Jang.

APPLICANTS' TRAVERSAL:

35 U.S.C.§102:

With regard to item (1), it is alleged in the Office Action that Jang teaches an apparatus and method for manufacturing a long-period fiber grating including an ultraviolet light, a cylindrical lens and a concave lens serving together as a lens field to converge the UV light, and an amplitude mask. Jang allegedly discloses that the amplitude mask has a defined period as shown in Fig. 2 and the distance between the converging point of the concave lens and the amplitude mask is designated as "x" and the distance between the amplitude mask and the optical fiber designated as "y"; it is indicated in the Office Action that "this means the claimed longitudinal ratio is defined by $x/(x+y)$." It is further alleged

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that the instantly claimed transverse ratio is equal to the longitudinal ration as indicated in equation (3) of Jang.

However, Applicants respectfully submit that Jang fails to teach at least that the thickness of the amplitude mask is set to match a stripe pattern of the apodized optical fiber grating with a pattern of light distribution on a light exit surface of the amplitude mask.

In other words, by adjusting the thickness of the amplitude mask, a pattern of the apodized optical fiber grating can be conformed to that of the optical distribution on the light exit surface of the amplitude mask.

For at least this feature, claim 1 is not anticipated by Jang. In addition, Jang also fails to disclose or suggest a light source, lens system, amplitude mask and optical fiber are arranged on an optical axis, and wherein the width of each strip along the optical fiber becomes narrower as the stripe is positioned further away from the optical axis as now recited in step (a).

In response to the Examiner's rebuttal of our previous arguments, Applicants respectfully submit that at the very least, Jang fails to disclose or suggest step (d) of the process recited by

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claim 1. Applicants respectfully request that the Examiner indicate where Jang discloses at least step (d) of instant claim 1.

Accordingly, as Jang fails to disclose (at least) the recitation that "(d) setting a thickness of the amplitude mask so as to match the stripe pattern of the apodized optical fiber grating set in step (a) with a pattern of a light distribution on a light exit surface of the amplitude mask", this reference fails to anticipate the claimed invention, as it fails to disclose all of the recited elements of instant claim 1. Claims 2 -7 are patentable at least because of dependence from claim 1 and because of an individual basis for patentability.

Accordingly, it is respectfully requested that all grounds of rejection in view of Jang be withdrawn.

With regard to item (2) in view of Bhatia, it is respectfully submitted that Bhatia similarly fails to disclose or suggest at least step (d) as recited by instant claim 1, and the Final Office Action fails to show where in Bhatia such teaching is disclosed. Applicants respectfully request where Bhatia makes such a disclosure.

Furthermore, Bhatia also fails to disclose or suggest that a light source, lens system, amplitude mask and optical fiber are

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arranged on an optical axis, and wherein the width of each stripe along the optical fiber becomes narrower.

Accordingly, claims 1,2 and 5-7 are also not anticipated by Bhatia, as the reference at least fails to disclose all of the instantly claimed steps of instant claim 1, particularly the recitations in steps (a) and (d) discussed above.

It is respectfully submitted that the Court of Appeals for the Federal Circuit held in *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628,631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987):

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

The Final Rejection has not set forth a *prima facie* case of rejection under 35 U.S.C. §102 because in either case, the cited reference does not contain all of the features in Applicants claims.

35 U.S.C. §103(a):

With regard to items (3) above, it is respectfully submitted that none of the present claims are anticipated by, or would have been obvious over, the cited references.

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A person of ordinary skill would not have been motivated by the teachings of the Bhatia so that any of the instant claims would have been obvious in view thereof. As Bhatia fails even to disclose the basic elements of the base claim (see arguments presented in regard to 35 U.S.C.§102), the additional features introduced in claims 2-4 would not have made these claims obvious to a person of ordinary skill in the art. At least for dependency on base claim 1, these claims are also patentable. Reconsideration and withdrawal of this ground of rejection are respectfully requested.

DOUBLE PATENTING REJECTION

With regard to item (4), it is respectfully requested that this item be held in abeyance until the other issues are resolved.

For all the foregoing reasons, it is respectfully submitted that all the present claims are patentable in view of the cited references. A Notice of Allowance is respectfully requested.

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Should the Examiner deem that there are any issues which may be best resolved by telephone communication, she is respectfully requested to telephone Applicants' undersigned Attorney at the number listed below. If there are any fees due and owing, please charge Deposit Account No. 502-470.

Respectfully submitted,



By: Steve Cha
Attorney for Applicant
Registration No. 44,069

Date: 10/24/02

Mail all correspondence to:
Steve S. Cha, Reg. No. 44,069
CHA & REITER
411 Hackensack Ave, 9th floor
Hackensack, NJ 07601
Phone: (201)518-5518
Fax: (201)518-5519



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APPLICANT: Heu-Gon Kim et al. ART UNIT: 2872
SERIAL NO.: 09/750,576 EXAMINER: Audrey Y Chang
FILED: December 28, 2000
FOR: FABRICATION METHOD OF APODIZED OPTICAL FIBER
GRATING USING AMPLITUDE MASK

VERSION WITH MARKINGS SHOWING CHANGES MADE

Assistant Commissioner for Patents
Washington, DC 20231

Dear Sir:

In response to the Final Office Action dated July 24, 2002,
the Applicants respectfully request entry of the amendment and
request reconsideration of the above-identified application as
follows:

IN THE CLAIMS:

Please amend claim 1 as follows:

1. (Twice Amended) A method for fabricating an apodized
optical fiber grating using an ultraviolet light source, a lens
system for converging the light incident from the ultraviolet light
source, an amplitude mask for selectively transmitting therethrough
the ultraviolet light incident from the lens system onto an optical
fiber, wherein the light source, the lens system, the amplitude

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mask and the optical fiber are arranged on an optical axis, the
method comprising the steps of:

(a) setting a period of the apodized optical fiber grating
formed on the optical fiber and setting a width of each stripe of
the apodized optical fiber grating, wherein the width of each
stripe along the optical fiber becomes narrower as the stripe is
positioned further away from the optical axis;

(b) setting a longitudinal ratio, which is a ratio of the
distance between a converging point of the lens system and the
amplitude mask and the distance between the converging point of the
lens system and the optical fiber;

(c) setting a period of the amplitude mask so as to
equalize a transverse ratio, which is a ratio of the period of the
amplitude mask and the period of the apodized optical fiber
grating, with the longitudinal ratio set in step (b); and

(d) setting a thickness of the amplitude mask so as to match
the stripe pattern of the apodized optical fiber grating set in
step (a) with a pattern of light distribution on a light exit
surface of the mask.